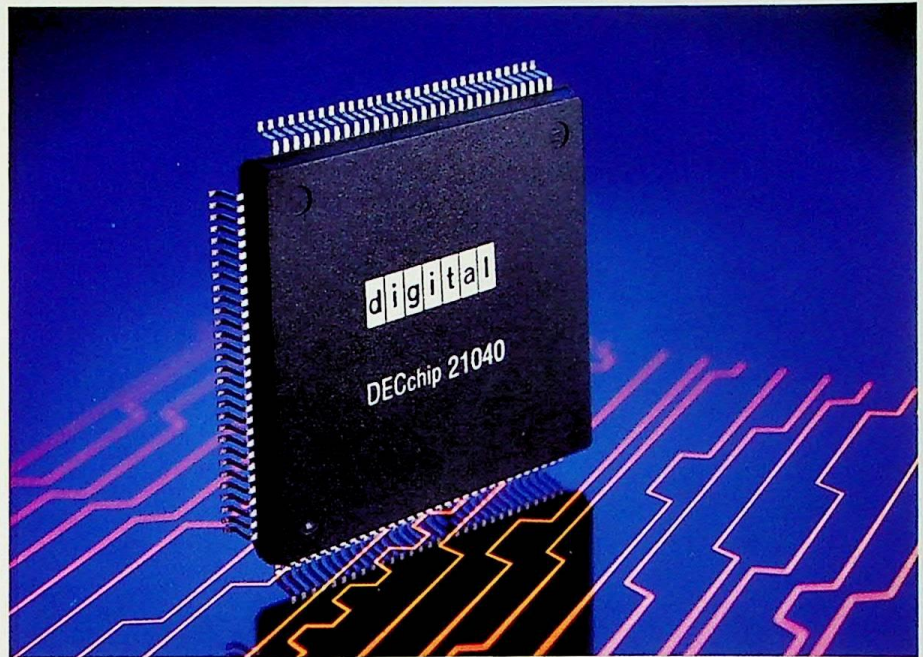


DECchip 21040 PCI Ethernet Controller

Highest performance in the Industry

DECchip 21040:

digital



The DECchip 21040 is a high performance, single-chip Ethernet controller, optimized for PCI NICs and motherboards.

Throughput and CPU utilization are the two important aspects of NIC performance, and the DECchip 21040 clocks in with the highest throughput in the industry, with very low CPU utilization.

Highest Throughput with Low CPU Utilization

High throughput means that your applications run more efficiently, with fewer network delays. The DECchip 21040's streamlined architecture lets your data packets fly through the adapter.

The DECchip 21040 achieves its high rate of throughput by using a sophisticated cut-through technique that allows parts of one packet to be in the host memory, in the controller, and on the Ethernet wire -- simultaneously. Traditional adapters, on the other hand, require that an entire packet be copied to the adapter before it can be forwarded to the Ethernet or to host memory.

The DECchip 21040 speeds data to and from the network with minimal CPU intervention because of the DECchip 21040's powerful PCI bus master architecture. The DECchip 21040 harnesses the full speed of PCI, moving bursts of data across the PCI bus at 16 times the speed of an ISA adapter.

Low CPU utilization is more important than ever before because of today's multi-tasking operating systems, such as Windows NT, Windows for Workgroups, OS/2, Netware 4 and others. Low CPU utilization means that your computer is free to run your applications, instead of wasting cycles processing network traffic.

DECchip 21040:

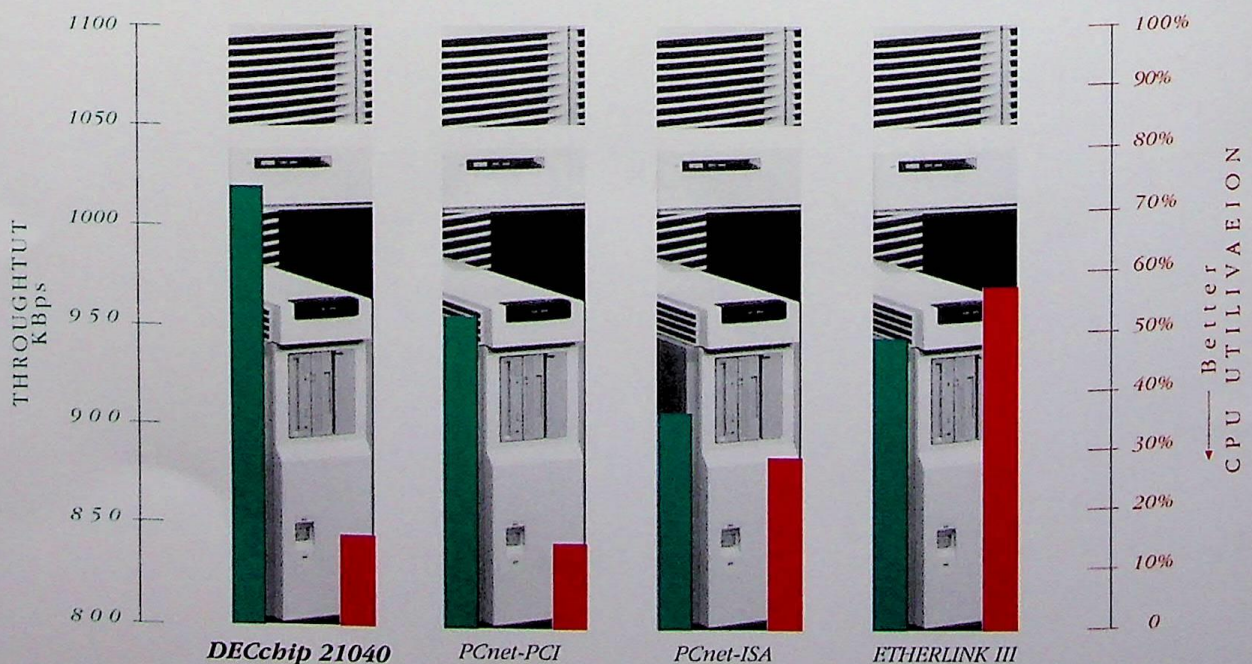
Low CPU utilization is also an absolute necessity for servers handling several network segments. Traditional ISA and EISA Programmed I/O or shared memory Ethernet adapters "use up" a computer's CPU power moving data to and from main memory. But now, with the DECchip 21040's powerful PCI bus master architecture, your system can move network data to and from main memory without any CPU intervention. In fact, the CPU need not even know when data is being transferred to or from the Ethernet bus.

Stacking up Against the Competition

Put the DECchip 21040 up against any other Ethernet controller and the DECchip 21040 wins every time -- hands down. Take a look at these test results:

Running Perform3 on a DECpc433 XL server with Novell Netware 3.11 and high-performance clients -- an evaluation board with the DECchip 21040 challenged three well-known competitors: the PCnet-PCI and PCnet-ISA (evaluation boards) and the EtherLinkIII. Each board was tested on file sizes ranging from 512 to 4096 bytes, increasing in steps of 512 bytes.

The graph shows that DECchip 21040 wins the throughput contest with margin to spare. DECchip 21040 shows top throughput, not only at its peak, but over the whole range of file sizes. While sustaining this throughput, DECchip 21040 uses very little CPU resources. CPU utilization, of course, depends on the amount of data a board handles. Even the runner-up among the other boards tested uses more CPU per kilobyte of data than the DECchip 21040.



1040

DECchip 21040: No-Compromise Design for Superior Performance

The DECchip 21040 has been designed for tomorrow as well as for today. It takes full advantage of PCI system capabilities, through its design features, including:

Powerful PCI Bus Mastering Architecture

The DECchip 21040 works as a bus master, controlling bursts of data to and from host memory without CPU intervention. Data is transferred at 132 Mbytes/second, 16 times the speed of ISA controllers and 4 times as fast as EISA controllers.

Native 32-bit Design

The DECchip 21040 was designed as a 32-bit controller from the start; its 32-bit design results in true 32-bit performance. On the other hand, most other Ethernet controllers are based on 16-bit designs and connected to a PCI (or other) 32-bit bus interface. They may claim to be 32-bit designs, but internally these other controllers have all the limitations of old-style 16-bit controllers.

Full-duplex Mode

In full-duplex mode, the DECchip 21040 transmits and receives simultaneously, providing twice the bandwidth of conventional Ethernet operation. For DECchip 21040, full-duplex operation is not an add-on feature -- it was designed in from the beginning for full-duplex operation that ensures maximum performance under the doubled workload.

Innovative Arbitration Between Reception and Transmission

DECchip 21040's innovative arbitration scheme solves the traditional design problem of "starved" transmissions or reception data transfers, by dynamically sharing internal chip resources and PCI bus bandwidth between transmit and receive. This minimizes the possibility of starvation and optimizes full-duplex operation.

Deep FIFOs

The DECchip 21040 has independent transmit and receive FIFOs of 256 bytes each, providing buffering to ensure smooth network functioning, even when the PCI system bus is busy with other devices. These FIFOs allow the DECchip 21040 to tolerate high system bus latencies without data loss and to handle full-duplex mode with peak efficiency.



Minimum Inter-Packet Gap

The DECchip 21040's transmit and receive engines work independently, so that transmission can be prepared during reception. As a result, the DECchip 21040 can transmit immediately after reception, waiting only for the minimum inter-packet gap (IPG) allowed by the Ethernet specifications. In full-duplex operation, these powerful, independent engines are a key factor in optimizing throughput in both directions simultaneously.

The DECchip 21040 is the no-compromise PCI Ethernet controller. Its superior architecture provides the leading edge for Ethernet adapters. DECchip 21040 comes through every time with the best performance of any Ethernet controller in the industry.

For More Information

To learn more about availability of the 21040 contact your local Digital sales representative, or Digital's Semiconductor Information Line:

1-800-332-2717

1-800-332-2515 (TTY)

Outside North America, call: +1-508-568-6868

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